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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,565	10/23/2003	Hiroshi Tanaka	67161-124	5966

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EXAMINER	
ALANKO, ANITA KAREN	
ART UNIT	PAPER NUMBER
1765	
MAIL DATE	DELIVERY MODE
07/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/690,565	TANAKA, HIROSHI	
	Examiner	Art Unit	
	Anita K. Alanko	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-8* is/are pending in the application.

4a) Of the above claim(s) *8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/30/07 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-4 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayer et al (US 2004/0065540 A1) in view of Takekuma (US 5,580,607) or Shirakawa et al (US 6,222,161 B1), and in view of Holsteyns et al (US 2004/0045589 A1).

Mayer discloses a substrate cleaning [0047] device (Fig.9 or Fig.11) comprising:

a plurality of heat sources 832, 838, each used for heating ("multizoned heater" lines 29-36 of paragraph [0082]);

temperature controller ("time varying control of a heater allows dynamic variation of temperatures during the treatment process" last sentence of paragraph [0082]) provided to control a temperature of said plurality of heat sources ("heaters") to allow said plurality of heat sources to be set at different temperatures independently of each other ("zone" heaters allow

independent temperatures since there is a "nonuniform heating profile" see excerpt of paragraph [0082] below);

> zoned heaters **832**. In another aspect, as depicted in **FIG. 11**, a substrate-holder chuck **806** comprises backside dispensing tubes **834** for directing heating fluid, deionized water, cleaning liquids, or other liquids **835** at backside **836** of a substrate **808**. In certain embodiments, chuck **806** includes backside zone heaters **838** for heating substrate **808**. A multizoned heater generates and controls a nonuniform heating profile in treating head **804** or in a substrate-holder **806**, and thereby enhances temperature control in a thin liquid layer **826**. Time-varying control of a heater allows dynamic variation of temperatures during the treatment process.

substrate holder 806 to hold substrate 808 being separated from said heat sources with a gap 812 (or near backside of substrate 836), and being opposite to said heat sources (see Figure 9 or Figure 11); and

liquid filler 826 (or that liquid 835 at the backside of the substrate 836) provided to fill [0058] said gap with liquid, disposed within a through hole (inlet pipes 822, or for backside 834) provided to extend vertically through a center of said plurality of heat sources (832, or for backside 838, see Fig.9 and 11 which shows several through holes, but at least also including the center).

The apparatus is capable of increasing or decreasing the temperature through a heating or cooling operation of the heat sources, as cited in the method limitation of amended claim 1.

Further as to claim 1, Figures 9 and 11 depict that the heaters are concentric, however this concentricity is not explicitly cited. Concentric heaters are expected in Mayer because the apparatus has circular symmetry, and therefore the heaters are expected to be concentric. In the alternative, Takekuma (temperature controllers 34a-c to control temperatures in zones (col.10, lines 63-67) with a heater (col.12, line 17)) and Shirakawa (see abstract, heater for each region)

both teach the advantage of more uniform processing by having a plurality of heat sources each having a surface opposite to the substrate along a different concentric circle.

Thus, it would have been obvious to have concentric heaters in the apparatus of Mayer in order to have more uniform processing as taught by Takekuma or Shirakawa.

Still further as to claim 1, Mayer does not explicitly disclose that the substrate holder holds an edge of the substrate. Holsteyns teaches that it is useful to hold a substrate at its edges during rotary processing ([0038]). It would have been obvious to one with ordinary skill in the art to use a substrate holder that holds an edge of the substrate in the apparatus of Mayer because Holsteyns teaches that this is a useful configuration for rotary processing.

As to claim 3, Mayer discloses said substrate is rotated 866.

As to claim 4, Mayer discloses chuck pins [0053].

As to claims 6-7, Mayer does not disclose the composition of the chuck pins. However, Mayer teaches that a useful composition for use in the cleaning device are resins such as polyvinyl chloride because they can withstand temperature and corrosive conditions of etching operations [0053]. Etching operations include cleaning operations. It would have been obvious to one with ordinary skill in the art that the chuck pins comprise resin such as PVC in the apparatus of Mayer because Mayer teaches that PVC is a useful material in cleaning devices because they can withstand temperature and corrosive conditions of etching operations.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mayer et al (US 2004/0065540 A1) in view of in view of Takekuma (US 5,580,607) or Shirakawa et al (US

6,222,161 B1), and in view of Holsteyns et al (US 2004/0045589 A1), as applied to claim 1, and further in view of Hasegawa et al (US 5,677,622).

The discussion of modified Mayer from above is repeated here.

As to claim 5, Mayer does not disclose what the heater is, and thus does not disclose the specific "Peltier device". Mayer discloses to use conventional means to control the heaters [0069].

Hasegawa teaches a useful way to control the temperature during etching. Hasegawa teaches that a substrate holder 20 may comprise a layer of Peltier elements 40, including Peltier elements 45 in the center area and Peltier elements 47 in an outer area (col.3, lines 47-64). The advantage of using Peltier elements is that it provides for localized temperature control of each region of the wafer 14 (col.3, lines 65-67).

Hasegawa teaches that different chucks may be used such as mechanical chucks (col.4, line 62) – in which case the wafer is separated from the holder by a gap as in the apparatus of Mayer.

It would have been obvious to one with ordinary skill in the art to use Peltier devices in the apparatus of Mayer because Hasegawa teaches that they are useful for providing localized temperature control of each region of the substrate.

Response to Amendment

The claims remain rejected over Mayer under 35 USC 103.

Response to Arguments

Applicant's arguments filed 4/30/07 have been fully considered but they are not persuasive.

Applicant requests rejoinder. Although rejoinder will be considered, it is not expected that rejoinder will be granted between the apparatus and method inventions. Method limitations about temperature distributions during a processing method such as cleaning are given little weight in apparatus claims. Still further, in order to retain the right to rejoinder, applicant is advised that the claims to the nonelected inventions should be amended during prosecution to require the limitations of the elected invention. Failure to do so may result in a loss of the right to rejoinder.

Applicant argues that the prior art does not suggest the combination of apparatus elements cited in, for example, claim 1. This is not persuasive, because although not explicitly disclosed, concentric heaters are suggested because of the radial symmetry of the apparatus. Still further as highlighted above at paragraph 82, Mayer discloses to have zoned heaters with a non-uniform temperature distribution, for example in combination with the use of cleaning agents. When taken together with the other cited prior art, the invention is deemed obvious.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 2:30 pm (Wed until 11:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Anita K Alanko/
Primary Examiner
Art Unit 1765